



INSTRUCTION TO SERVICE

ITS: 6865	
SECTION:	204 Rear Suspension
WRITTEN BY:	Tyler Omichinski
SUBJECT:	Replace Brake Caliper Guide Pins on Center Axle

ITS6865

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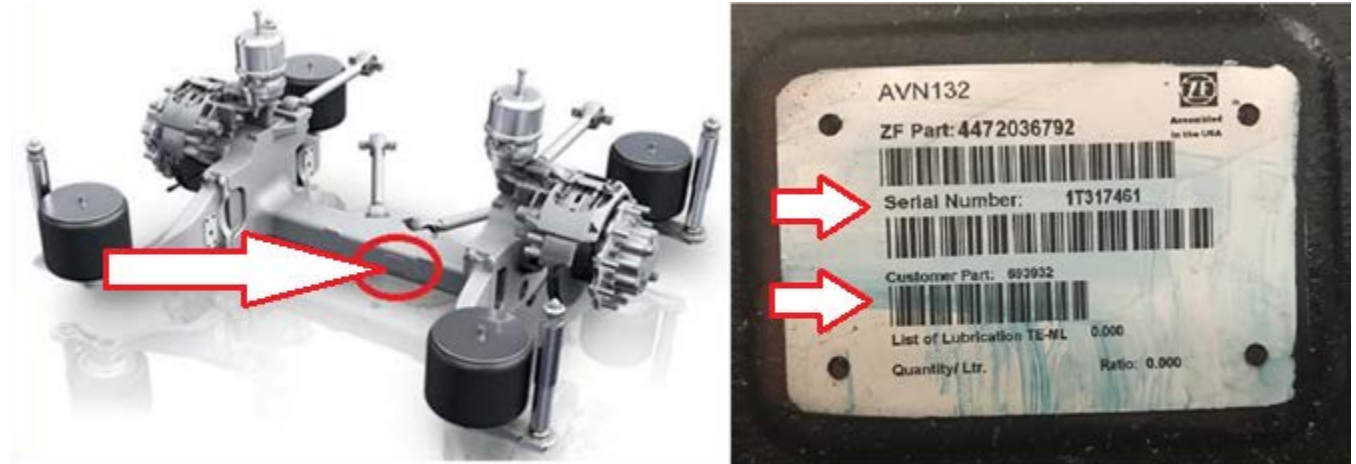


PROCEDURE:

- ☞ **NOTE:** This instruction is broken into 3 sections. The first section requires you to determine if the center axle calipers must be reworked. The second section describes the rework procedure for each caliper that must be reworked. The third section explains how to return the bus to service and submit necessary documentation.
- ☞ **NOTE:** The inspection sheet found at the end of this document must be completed for every bus and submitted to your New Flyer Regional Product Support Manager.

Part 1 – Inspect Center Axle Calipers:

1. Record the vehicle SR number, fleet number, mileage, and current date on the inspection sheet found at the end of this document.
2. Turn the main battery disconnect switch to the “OFF” position.
3. Raise coach and remove center axle wheels in accordance with the New Flyer Service Manual.
4. Locate the center axle data plate on the rear side of the main beam of the axle. Record the axle serial number and customer part number, as shown in Fig. 1, on the inspection sheet.



Serial number and customer part number information can be located on the data plate as shown above

Figure 1: Location of center axle serial and customer part numbers

5. Locate the street side caliper data plate on the body of the caliper at the fixed guide pin. Record the caliper date of manufacture, found on the bottom line of the data plate as shown in Fig. 2. Note if there are punch marks on the data plate, similar to those shown on the data plate in Fig. 2.
6. Repeat Step 5 on the curb side caliper. Record all relevant information on the inspection sheet.

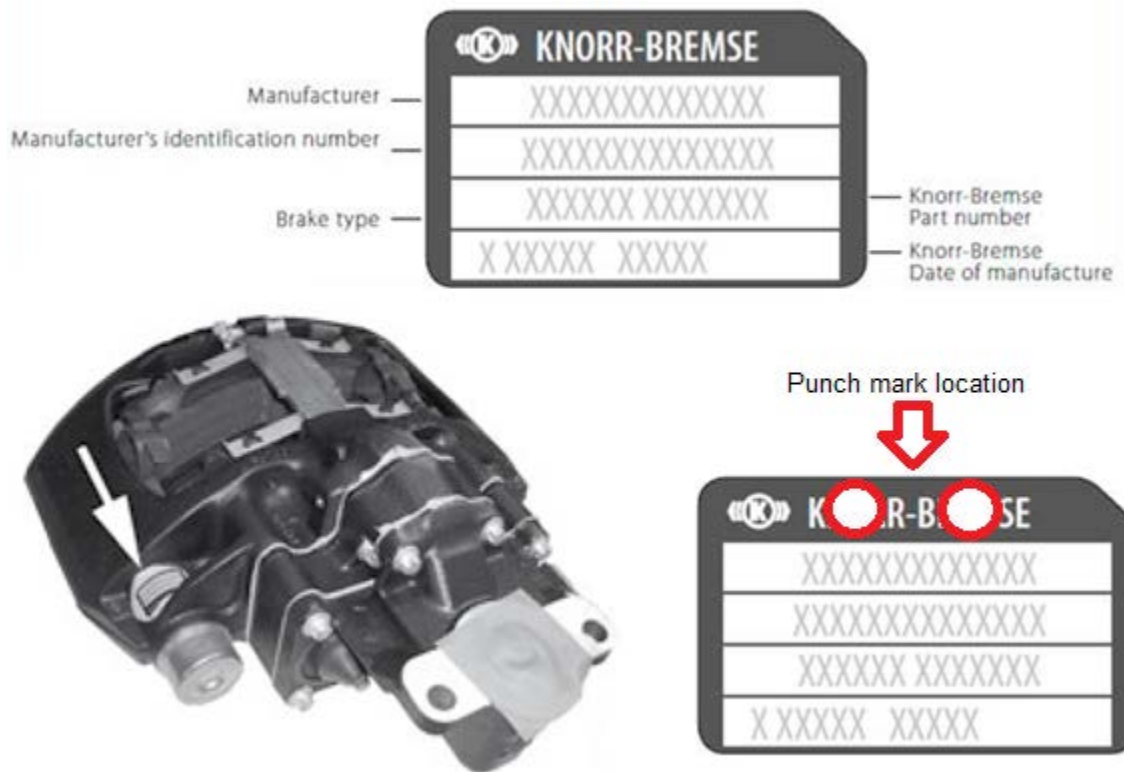


Figure 2: Caliper data plate location, information, and possible punch marks (typical both sides)

- Determine if each caliper must be reworked based on production date and presence of punch marks. If a caliper must be reworked, proceed to Part 2 of this instruction. If no caliper requires rework, proceed to Part 3.

NOTE: If the caliper falls within the affected production range AND does not have the punch marks shown in Fig. 2, it must be reworked using the instructions provided in Part 2 of this ITS.

Only calipers produced between 01.01.2015 and 16.01.2017 must have their guide pins replaced. The production date of the caliper can be determined from the number on the bottom left of the caliper data plate. The first 6 digits of the production number can be interpreted as follows:

- Digit 1: A, L, or C for the manufacturer
- Digit 2 + 3: Year of manufacture e.g. 15 = 2015
- Digit 4 + 5: Production week, e.g. 36 = 36th week in the year of manufacture
- Digit 6: Day in the production week 1 = Monday, 2 = Tuesday, etc.

Parts manufactured during this period have a manufacturer code containing 15xxx (all 2015 production), 16xxx (all 2016 production), or 17xxx up to 17031 (2017 production to Jan. 16th).



If you require assistance in determining if a caliper must be reworked, contact your New Flyer Regional Product Support Manager to provide an assessment.

Part 2 – Rework Center Axle Calipers As Required:

- ☞ **NOTE:** Complete Part 2 for each caliper identified as requiring rework in Part 1 of this instruction. The Service Manual is required to complete this instruction.
- ☞ **NOTE:** A video repair instruction is available. If required, please contact your New Flyer Regional Product Support Manager
8. Cage the brake chamber by manually rotating the integral release bolt counter-clockwise, following the instructions specific to the installed brake chamber per the New Flyer Service Manual.
- ⚠ **WARNING:** Do not attempt to remove the brake chamber without first caging the spring and removing air pressure. Do not use impact tools to cage or uncage the brake chamber.
9. Clean the surrounding of the brake chamber and caliper interface to avoid ingress of dirt into the interior of the brake. Remove and discard the chamber mounting nuts.
10. Remove the brake chamber. Clean the mating faces of the brake chamber and caliper. Inspect the mounting face on the brake caliper for signs of moisture or contamination.
- ☞ **NOTE:** If corrosion or contamination is discovered inside the caliper, replace the caliper assembly per the instructions in the vehicle Service Manual.
11. Insert an appropriate plug into the brake cylinder bore on the brake caliper to prevent dirt intrusion.
12. If equipped, disconnect the continuous wear sensor harness from the back of the caliper.
13. Remove the brake pads using the instructions found in the Service Manual.
14. Support the caliper and carrier assembly with appropriate lifting equipment.
15. Loosen the 6 bolts securing the brake caliper carrier to the axle. Note the location of the single shoulder bolt for reinstallation.
- ☞ **NOTE:** The bolt adjacent to the center axle radius rod cannot be fully removed as it contacts the radius rod bracket. However, the caliper can be removed once the bolt is fully loosened.
16. Remove the caliper and carrier from the axle as an assembly and place it on a work bench to perform guide pin replacement.
17. Using the replacement parts kit (NF P/N 6473988) and the brake caliper repair tool kit (NF P/N 6408310) or similar brake tool kit applicable to the Knorr SB7 caliper, replace the caliper guide pins and bushings, and reassemble the caliper onto the carrier using the instructions found in the Service Manual.



NOTE: It is recommended that other caliper wear parts such as tappet boots be inspected and serviced as required at this time as part of normal maintenance.

18. Using a paint marker or similar method, place a mark on the caliper data tag indicating that the rework has been completed.
19. Replace the reworked caliper and carrier assembly onto the hub carrier.
20. Inspect the condition of the caliper carrier bolts. If there are no signs of damage, stretching, or corrosion on the bolt threads, the bolts can be reused. Otherwise, replace the 5 hex bolts (NF P/N 6407939) and 1 shoulder bolt (NF P/N 6407940) with new parts as required.
21. Reinstall the shoulder bolt in the same location from which it was removed.
22. Reinstall the remaining 5 hex bolts onto the caliper. Tighten all 6 caliper mounting bolts to 270 Nm (199 ft-lb) DRY.
23. Reinstall the brake chamber using the new mounting nuts provided in the parts kit. Tighten both nuts to 34 Nm (25 ft-lb) DRY then tighten to final torque of 183 Nm (135 ft-lb) DRY.
24. Install brake pads and adjust to specification using the instructions found in the Service Manual.
25. If equipped, reconnect the continuous wear sensor harness to the back of the caliper.

Part 3 – Return Bus to Service Condition and Submit Documentation

26. Confirm that all required information is filled in on the inspection sheet.
27. Reinstall center axle wheels in accordance with the New Flyer Service Manual and lower coach.
28. Remove all tools and debris and return the bus to service condition.
29. Turn the main battery disconnect switch to the “ON” position.
30. Submit the completed inspection sheet to your New Flyer Regional Product Support Manager.



NEW FLYER

LABOUR ESTIMATE

	Operation	Men	Hours	Labour Time M X HR
1	R+R center axle wheels and brake calipers (both sides)	1	3.4	3.4
2	R+R guide pins and bushings (both calipers)	1	1.6	1.6

PARTS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	6473988	BRAKE CALIPER REPAIR KIT	2	EA	1 per caliper
2	6407939	SCREW, HEX	10	EA	As required
3	6407940	SCREW, FITTING	2	EA	As required

SPECIAL TOOLS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	6408310	REPAIR KIT – DISC BRAKES	1	EA	
1	NPN	Paint marker	1	EA	

Center Axle Brake Caliper Inspection Sheet

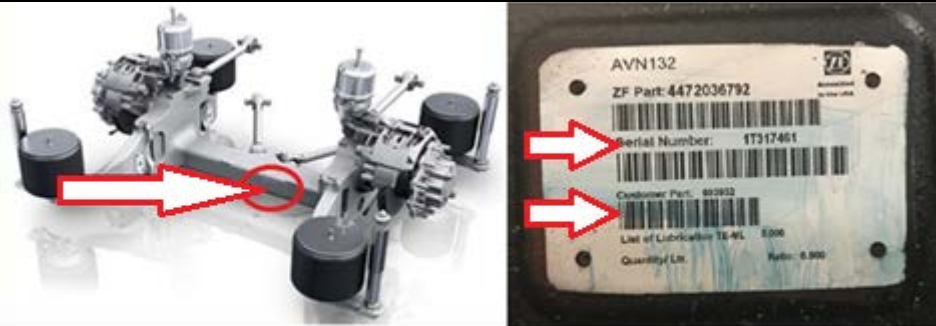
Fleet Number: _____

Date: _____

SR Number: _____

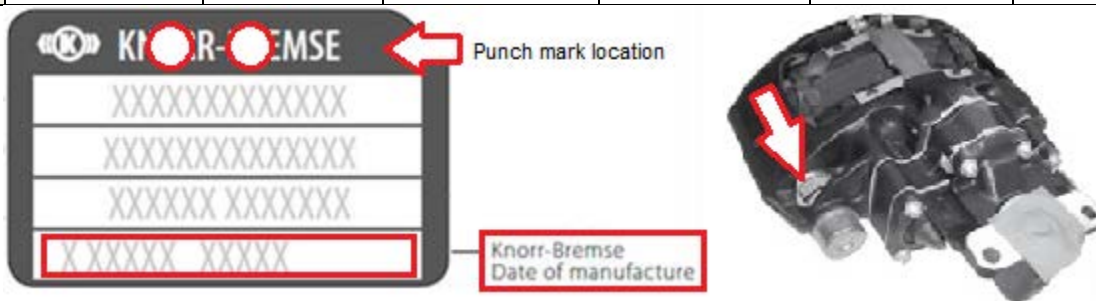
Mileage: _____

1.	Record Axle Serial Number and Customer Part Number found on axle data tag:	Axle Serial Number	
		Customer Part Number	



Serial number and customer part number information can be located on the data plate as shown above

2.	Record Street Side Caliper Data:		Record Curb Side Caliper Data:		
	Caliper Date Code		Caliper Date Code		
	Punch Marks	Present [] Not Present []	Punch Marks	Present [] Not Present []	



3.	Did you replace caliper guide pins?	Street Side Caliper		Curb Side Caliper	
		Yes []	No []	Yes []	No []

NOTE: If the caliper falls within the affected production range AND does not have the punch marks shown above, it must be reworked using the instructions provided in Part 2 of this ITS.

NOTE: When this inspection sheet is complete, please forward to your New Flyer Regional Product Support Manager